

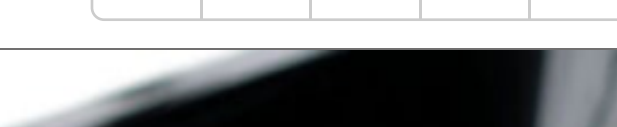
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Farmed Salmon Producers to Use GM Canola Oil in Fish Feed

The genetically modified canola oil, newly approved in Norway to feed farmed salmon, is engineered to be grown using glufosinate, an herbicide banned in the European Union and withdrawn from the French market in 2017 due to its classification as toxic for reproduction.

By GMWatch



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By Claire Robinson

The Norwegian Food Safety Authority has approved a [genetically modified \(GM\) canola oil](#) for use in [feed for farmed salmon](#). The canola was genetically engineered to contain healthy omega-3 long-chain fatty acids.

The GM canola, called NS-B50027-4, was developed as a land-based source of marine ("fishy") fatty acids. This is being touted as an environmental benefit since [farmed salmon](#) are normally fed on fish oil to boost their omega-3 levels.

Wild fish get their omega-3 from eating algae. But wild fish stocks are depleted and the [price of fish oil has risen](#), meaning that the amount of fish oil in [salmon feed](#) has decreased markedly in recent years.

The "Aquaterra" omega-3 canola oil is being promoted as sustainable in the media by [Nofima](#), a Norwegian research institute that conducts research and development for the aquaculture industry. Its scientists carried out research on [Aquaterra omega-3 canola oil](#).

They concluded that when salmon have a diet containing the oil, they get more omega-3 in their flesh, better pigmentation and fewer dark spots — qualities designed to appeal to the health-conscious consumer.



Deformed butterflies

Taking the pressure off wild fish stocks by growing GM oilseeds that produce health-enhancing long-chain omega-3 fatty acids might seem like a good idea.

However, a [study has found that these fish oils](#), novel in land-based ecosystems, cause [wing deformities in butterflies](#).

The study was not on GM canola, but on the fish oils that such GM crops are engineered to contain.

The researchers found that when the long chain omega-3 fatty acids found in fish oil — eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) — were fed to cabbage white butterflies, the insects grew into heavier adults and had a higher frequency of wing deformities.

The team was careful to test realistic doses that might be expressed in GM omega-3-producing crops and ingested by butterflies feeding on them.

[Dr. Angelika Hilbeck](#), senior scientist at the Institute of Integrative Biology at ETH Zurich, Switzerland and an expert on the ecotoxicology of GM crops, commented:

"The fact that these compounds [long-chain omega-3 fatty acids] are novel in terrestrial systems has been entirely overlooked until this study. I congratulate the authors for having raised the issue of this important ecological risk before these crops are planted on a significant scale."

The Norwegian Food Safety Authority does not appear to have taken this study into consideration in its approval of the omega-3 GM canola for fish feed.

And since the crop will not be grown on Norwegian soil, no authority within that country has seen fit to consider the [environmental risks](#) of the cultivation of this GM crop.

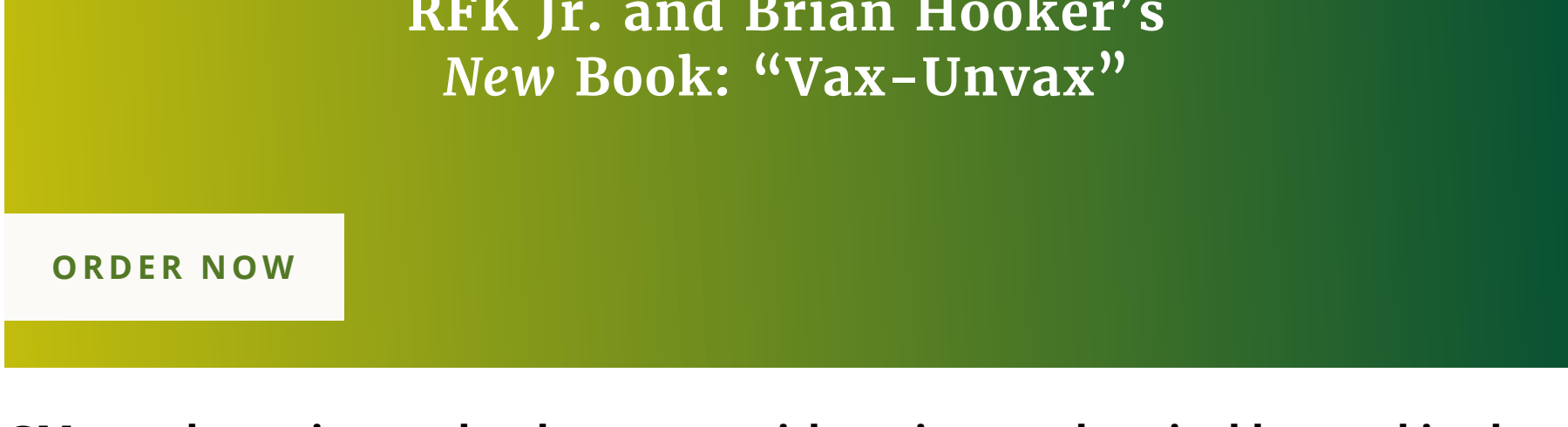
Safety of the GM canola oil for humans and other mammals

The Norwegian Food Safety Authority cites a limited [90-day feeding study in rats](#) as showing no toxic effects, but we couldn't find it online and it seems likely that it was not published in a peer-reviewed journal. Nor are the details provided in the authority's report.

However, a study on another [GM omega-3 canola oil](#) developed by BASF, this time fed to rats over the short period of 28 days, found that rats fed the highest dose of the GM oil had a lower mean corpuscular hemoglobin count than the control group fed oil from the parent canola variety and marine-derived fish oil. This can be a sign of iron deficiency anemia.

However, this and other significant differences between the GM oil-fed rats and controls were dismissed by the authors as not related to the genetically modified organism, or GMO, derived feed.

In such a short study, this is unproven. The study length would have to be extended to at least two years to see if GM omega-3 canola oil has any long-term adverse effects on mammals.



GM canola engineered to be grown with toxic agrochemical banned in the EU

In the case of NS-B50027-4 canola (sometimes referred to as [DHA canola](#)), Nofima's role seems to have been confined to providing the scientists to carry out the studies designed to promote regulatory and public acceptance of the product.

Nofima did not develop NS-B50027-4 canola — it is a [patented product](#) of the global seed company Nuseed.

The application for approval for [use in fish feed](#) was submitted to the Norwegian Food Safety Authority by Nufarm on behalf of Nuseed Nutritional Australia Pty Ltd.

[Nuseed](#) is a subsidiary of the Australian agrochemical company [Nufarm](#), which markets [glufosinate herbicides](#).

Given this GM canola's origin in a [chemical company](#), it is no surprise to learn that it is engineered for tolerance to the herbicide glufosinate.

The [Norwegian Food Safety Authority](#) notes:

"The [glufosinate tolerance] gene was initially used as a selection marker during the transformation process, but some farmers who grow the oilseed rape make use of this characteristic in their weed control after being trained by Nuseed."

[Glufosinate is banned](#) in the [European Union](#) (EU). It was withdrawn from the [French market in 2017](#) due to its classification as toxic for reproduction.



Approvals around the world

[GM Canola NS-B50027-4](#) was approved by the regulatory agency FSANZ for use in food in Australia and New Zealand in 2017. [Health Canada](#) approved it for food use in Canada in 2021.

Not sustainable

In conclusion, although Aquaterra oil is being promoted as an environmentally friendly product, it could harm wildlife in its cultivation, which is also set to increase the use of the highly [toxic herbicide glufosinate](#). Its safety as a food for humans and other mammals is unknown.

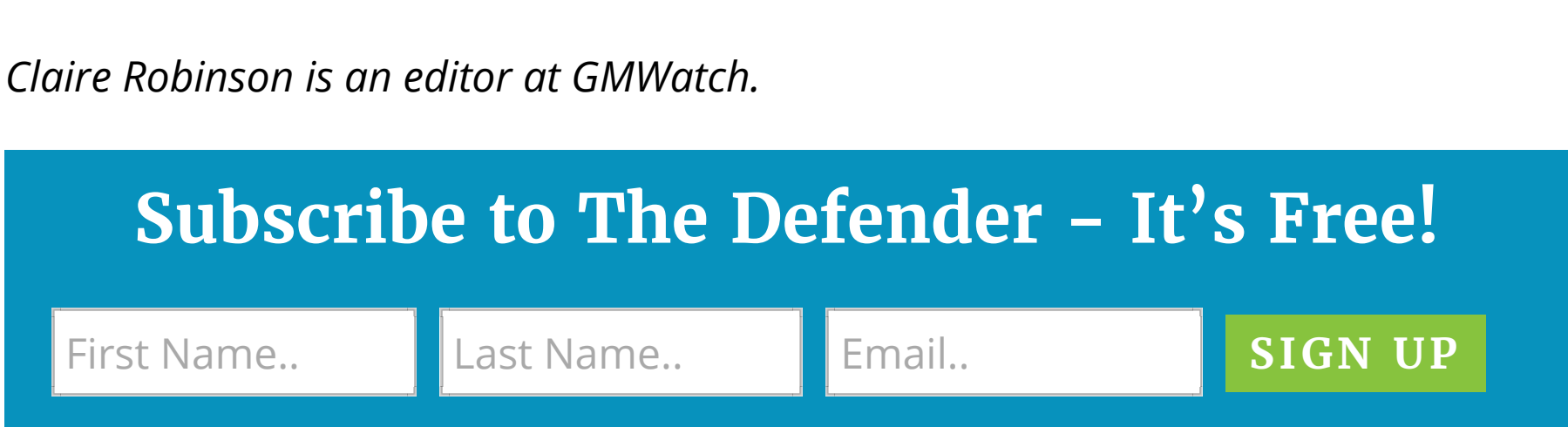
EU policymakers should take note, as they are currently considering an EU Commission proposal to fast-track approval for new GMOs if the developer claims they have "sustainable" traits. GMWatch strongly opposes this proposal.

As the story of land-based marine oil-producing GMOs illustrates, isolated traits cannot be termed "sustainable."

Only complete systems can be evaluated for sustainability. The entire life cycle of any given product, as well as its effects on other living creatures, must be evaluated in real-world conditions before it can be claimed to be sustainable.

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Claire Robinson is an editor at GMWatch.



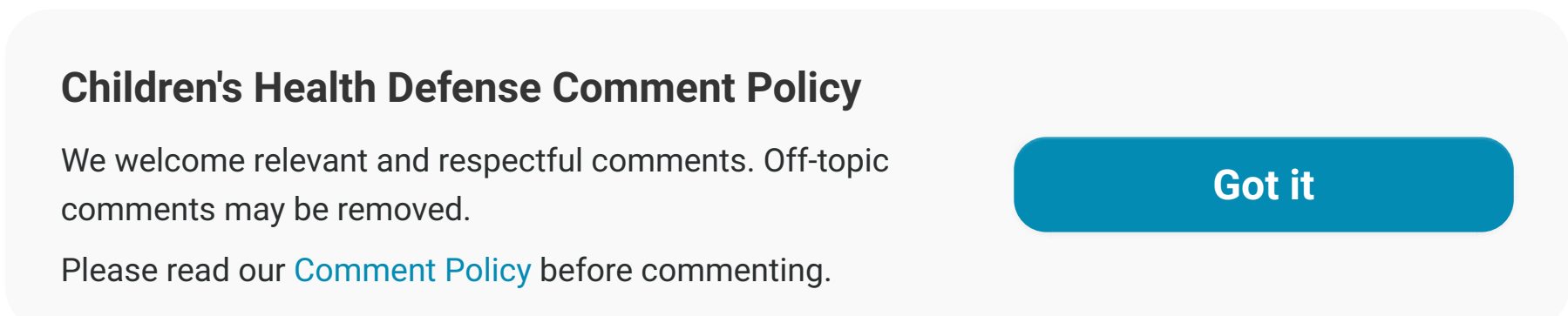
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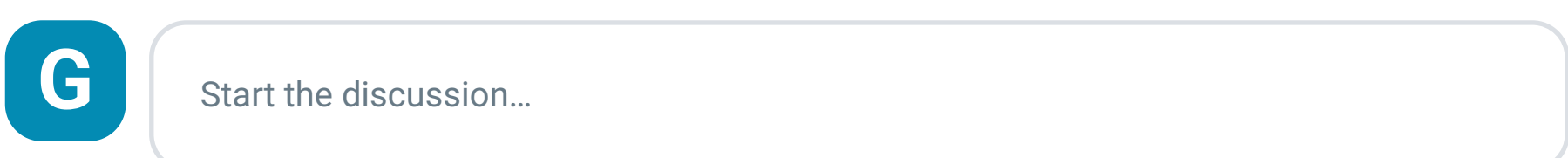
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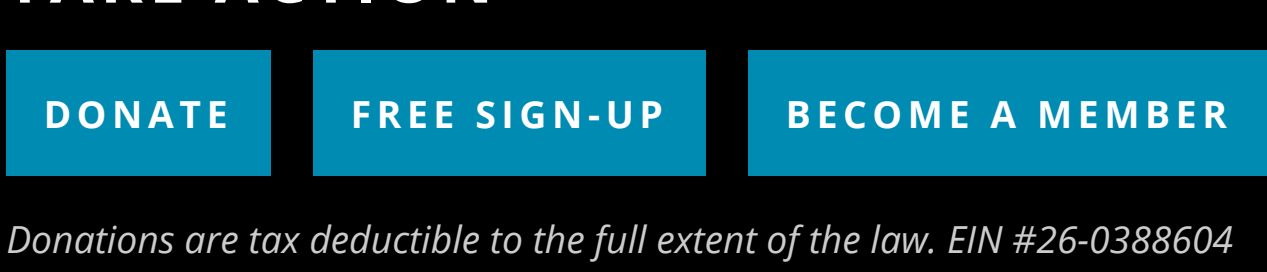
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